CLAIMS:

1. An image processing method for extracting a threadlike structure (GW) represented in an image, comprising :

a phase of acquisition (10) of a sequence of images, including an image of a present instant (t) in which the threadlike structure is to be extracted and an image of a past instant (t-1) in which the threadlike structure is detected as a string of points (G_{t-1}), and further comprising :

a phase of prediction (20) of a silhouette ($\hat{G}_t$) of the threadlike structure estimated from said detected string of points (G_{t-1}), of the image of the past instant,

a phase of pursuit (30) for extracting a final string of points (G_t) representing the threadlike structure in the image of the present instant t, including steps of estimation of constraints ($C2_t$, θ) based on said silhouette ($\hat{G}_t$) for performing said extraction.

2. The method of Claim 1, wherein in the prediction phase (20), the silhouette ($\hat{G}_t$) is formed of the string of points (G_{t-1}) detected in the image of the past instant (t-1).

3. The method of Claim 1, wherein :

the acquisition phase (10) comprises a first image of a first past instant (t-2) and a second subsequent image of a second past instant (t-1), in which the threadlike structure is detected as respective first and second strings of points (G_{t-2}, G_{T-1}),

and the prediction phase (20) comprises the calculation of a translation value (5) and speed of translation between the first and second strings of points (G_{t-2}, G_{t-1}), and the calculation of a translation value to occur between the second past instant (t-1) and the present instant (t) for estimating the location of the silhouette ($\hat{G}_t$) in the image of the present instant (t).

4. The method of one of Claims 1 to 3, wherein in the pursuit phase (30), the steps of estimation of constraints comprises the estimation of a Search-Zone (CZ_t) in the

image of the present instant (t) around the silhouette ($\hat{G}_t$) for a constrained extraction of the final string of points (G_t) in said Search Zone (CZ_t).

5. The method of Claim 4, wherein the Search-Zone is a Canal-Shaped Zone, labeled Canal Zone (CZ_t), centered on said silhouette ($\hat{G}_t$).

6. The method of one of Claims 4 or 5, wherein the steps of estimation of constraints comprises the estimation of an interval of directions ($\Delta\theta$) associated to the points of the Search-Zone.

7. The method of Claim 6, wherein a neighborhood is estimated for each given point of the Search Zone so that said neighborhood intersects the silhouette ($\hat{G}_t$) and determines a segment (K_1, K_2) and wherein the directions (θ) of the silhouette ($\hat{G}_t$) are determined at each point of said segment, forming a set of directions, which set of directions determines the interval of directions ($\Delta\theta$) for a constrained extraction of the final string of the points that are associated to an interval of directions ($\Delta\theta$).

8. The method of Claim 7, wherein the Search Zone is a canal-Shaped zone labeled Canal Zone (CZ_t) estimated by an operation of mathematical morphological dilation using discs (or spheres) (D_k) of a predetermined radius (R_t) around the silhouette ($\hat{G}_t$), and wherein the extraction of a string of points is performed in said Canal Zone (CZ_t) by ridgeness estimation along the directions of the interval of direction associated to each point and the final string of points (G_t) is selected from the points having the highest ridgeness.

9. The method of one of Claims 1 to 8, further comprising, in the pursuit phase (30), steps of tip evaluation for determining whether the tip of the extracted string of points is correctly located for representing the threadlike structure in the image of the present instant.

10. The method of Claim 9, further comprising in the pursuit phase (30), steps of shape correlation for estimating the correct location of a final tip for the final string of points (G_t) representing the threadlike structure.

11. The method of one of Claim 1 to 10 having a loop (4) between the pursuit phase (30) and the prediction phase (30) for improving the detection of the silhouette ($\hat{G}_t$) and the extraction of the string of points (G_t) for representing the threadlike structure (GW) in the image of the present instant (t).

12. A system comprising a suitably programmed computer or a special purpose processor having circuit means, which are arranged to process image data according to the method as claimed in any one of the preceding Claims.

13. A medical examination imaging apparatus having means for acquiring medical digital image data and having a system having access to said medical digital image data according to Claim 12, and having display means for displaying the medical digital images and the processed medical digital images.

14. A computer program product comprising a set of instructions for carrying out a method as claimed in one of Claims 1 to 11.